CHAPTER TWO
LAND MANAGEMENT DEVELOPMENT REGULATIONS

The Regulation of
Near-shore and Aquatic Development

I. Program Summary

This document covers the Regulation of Nearshore and Aquatic Development component of Tri-County Model ESA Response Program. This Program applies to development activities in aquatic and adjacent nearshore areas that either provide salmonid habitat or are connected to waters that supply salmonid habitat. These aquatic and nearshore areas encompass the "Management Zone." The width of the Management Zone (MZ) varies depending on a variety of factors. These factors include the nature of the aquatic area as habitat for, or its effect on, habitat of salmonids, the nature of the surrounding area, including the level of development, and the presence or absence of a channel migration zone, associated wetlands or steep slope.

Under this program, local governments have three options for regulating development within the Management Zone. These options have been designed to meet the habitat goals and objectives described in Appendix A to the Model.

Under this Program, a local government may choose one or any combination of these three options. It is recognized that there will be instances where local jurisdictions will lack the necessary legal authority to implement the proposed regulations as a result of federal or state preemption issue.

Under the *Fixed Regulations Option*, development proposals must comply with a standard set of development regulations. This set of regulations prescribes inner and outer Management Zones and development regulations for each zone designed to protect habitat functions from adverse effects of projects. The fixed regulations generally prohibit development activity in the area closest to the aquatic environment. A limited number of relatively minor actions (e.g., minor utility crossings, maintenance of flood control facilities), are allowed in this area if there are no other alternatives available that have less or no adverse environmental impacts, and impacts are mitigated with appropriate conservation measures. In these instances, a Habitat Evaluation (HE) must be used to determine what habitat functions will be affected and what mitigation and conservation measures will be required.

Under the *Site-specific Habitat Evaluation Option*, development proposals are reviewed based on a Habitat Evaluation (HE) that evaluates the habitat functions that are likely to be affected by the development proposal. Using this approach, the applicant is required to analyze the impacts of the development proposal and provide conservation measures, consistent with the program's habitat goals and objectives (set forth in Appendix 2-A), that are designed to protect habitat functions and mitigate for impacts to those functions. Based on the results of the HE, the local government will determine if the development proposal is approvable based on the fact that the project will not impede the habitat objectives for that site. Where the HE reveals that the project as proposed will have adverse impacts, the local government may either deny the project or require that the project be redesigned and/or its impacts mitigated to meet the habitat objectives. The scope and complexity of the HE analysis and the required level of detail shall be commensurate with the scope of the project. (See Appendix 2-D).

Under the *Programmatic Regulations Option*, a county or city may conduct an HE on a specific geographic area or specific type or category of development activity. Based on the results of the HE, the jurisdiction will identify allowable activities and appropriate protection and mitigation measures, consistent with the habitat goals and objectives of this program, set forth in Appendix 2-C.

Given the limits of local government authority and the mandates of state law, local jurisdictions seeking to implement the regulations described in this program will need to use a variety of local regulatory tools to implement this program. For example, a local jurisdiction may include the regulations described below in its critical areas regulations adopted under the Growth Management Act (RCW 36.70A), shoreline master programs and shoreline development regulations adopted under the Shoreline Management Act (RCW 90.58), and Class IV forest practices regulations adopted pursuant to RCW 76.09.240.

II. Application of the Management Zone

A. Applicability and Description

The "Management Zone" refers to an area of real property that is immediately adjacent to a defined water body (fresh, brackish and marine), both aquatic and nearshore areas that either provides salmonid habitat or are important to the proper functioning of salmonid habitat, such that the regulation of development on that real property is necessary. The regulatory options presented in Part III apply to any development activity that is proposed on land that is situated within the boundaries of the Management Zone.[1] Where only a portion of the land on which a development activity is proposed falls within the boundaries of the Management Zone, the regulations set forth under this program only apply to that portion of the property that is situated within the Management Zone. For the purpose of these regulations, the term "development activity" includes any cutting or clearing of vegetation and any construction, development, earth movement, or other site disturbance of the land, except for those exempt activities listed below.

1. **Management Zone Prerequisite – Rural Area Vegetation Retention Requirements**. As a prerequisite to using the fixed regulations described in this program, (in particular, the Management Zone widths defined in Tables 1 and 2), each jurisdiction shall require sixty-five percent (65%) vegetation retention in the development and redevelopment of rural residential zoned parcels (i.e. parcels located outside the urban growth area (UGA) that are zoned for single family residential use). In addition, jurisdictions shall require such developments and redevelopments to minimize total "effective, impervious surface" to less than ten percent (10%) of the development site by first attempting to fully disburse runoff from new impervious surfaces and cleared areas, to the maximum extent practicable, using the dispersion BMPs identified in Chapter 3 of the Model, the Stormwater Management Program.

2. **Measurement from the Channel Migration Zone**. The Management Zone shall encompass the channel migration zone (CMZ) and associated wetlands where they exist. The CMZ is the area within the lateral extent of likely stream channel movement due to stream bank destabilization, rapid stream incision, stream bank erosion, and shifts in location of stream channels. For regulatory purposes, the CMZ

[1] This proposal does not cover agricultural activities on land within the boundaries of the Management Zone.

shall be based on available historic records[2] of channel migration, or 100 years of calculated channel migration, whichever is greater, and will generally include those areas that encompass:

- The limit of geologic controls, such as hill slope, bedrock outcrop, or abandoned floodplain terrace;
- The side channels, abandoned channels, and oxbows; and
- The outside edges of any signs of progressive bank erosion at the outside of meander bends.

The CMZ does *not* include those areas that lie behind lawfully established flood control facilities for which a pre-existing, formal commitment exists to maintain the facility, and that either: (a) are designed and actively managed to withstand the erosional forces of the 100 year flood without significant damage (whether overtopped or not); or (b) provide the foundation for or protect an arterial road, sole access route, or regional transportation corridor.

A jurisdiction seeking to implement this Program shall conduct a jurisdiction-wide study, using the criteria set forth in Appendix 2-B, in order to set initial CMZ boundaries for all stream reaches where stream power, soil conditions, and valley-floor widths are sufficient to support significant potential channel migration. Further area-specific studies should be conducted periodically in order to provide accurate delineation of CMZ boundaries.

3. **Water Body Classification System**. Aquatic water bodies in the Management Zone shall be classified based on the water typing system described in WAC 222-16-030, which consists of classifying streams, lakes and ponds using a multi-parameter, field-verified geographic information system (GIS) logistics regression model. This method of classification is "habitat-driven" and replaces Type 1 through 5 water designations with geomorphic parameters such as basin, size, gradient, elevation and other indicators. This stream typing system classifies streams as S, N, or F. This water typing system is set forth in detail in the *Forest and Fish Report* approved by the Washington State Legislature in March 2000.

4. **General Description of the Management Zone Width.** As a general rule, the Management Zone widths range from 65 to 200 feet. They are prescribed minimums as measured from the Bankfull Channel Edge (BCE) of the aquatic water body. The size of the Management Zone increases where features are present such as associated wetlands, channel migration zones, and steep slopes that originate within the Inner Management Zone (described below).

   Until a local government develops scientifically-based, basin-specific Management Zones through the current WRIA planning process or some other watershed-based planning process acceptable to the Services, the Management Zones described below in Table 1 shall be used. The following table is a summary of the width of the Management Zone, as determined by water type:

[2] Historic records to be considered shall be maps, photographs and other documentation noting channel location.

TABLE 1 Summary of Management Zone Widths		
Water Type	**Water Body Criteria**	**MZ**
S	All waters within their ordinary high-water marks, inventoried as "shorelines of the state" under chapter 90.58 RCW and related rules (currently Type 1 waters under state DNR rules) including such waters' associated wetlands as defined in chapter 90.58 RCW.	200
F	All segments of natural waters[3] (other than Type S waters) (A) within the bankfull widths of defined channels or (B) within lakes, ponds, or impoundments having a surface area of 0.5 acre or greater at seasonal low water which, in either case, contain fish habitat[4] or are described by one of the following three categories: • Waters that are diverted for domestic use by more than 10 residential or camping units or by a public accommodation facility licensed to serve more than 10 persons, where such diversion is determined by DNR to be a valid appropriation of water and the only practical water source for such users; such waters shall be considered to be Type F waters upstream from the point of such diversion for 1,500 feet or until the drainage area is reduced by 50 percent, whichever is less; or • Waters that are within a federal, state, local, or private campground having more than 10 camping units provided that the water shall not be considered to enter a campground until it reaches the boundary of the park lands available for public use and comes within 100 feet of a camping unit, trail or other park improvement. • Waters that are diverted for use by federal, state, tribal, or private fish hatcheries; such waters shall be considered to be Type F waters upstream from the point of diversion for 1,500 feet and tributaries if highly significant for protection of downstream water quality.	200
F – Steep Ravine	Type F stream with a direct discharge to a marine shoreline with a gradient greater than 20% and annual mean flow less than 5 cfs flowing through a steep ravine with bank greater than 28 degrees slope	Grtr of 100 ft or 25 ft frm top of bnk
N – within 1/4 mile upstream of a Type S or F water	All segments of natural waters within the bankfull widths of defined channels that are not Type S or F waters and that are perennial streams[5] or seasonal streams[6] and are physically connected by an above-ground channel system to downstream waters such that water or sediment initially delivered to such waters will eventually be delivered to a Type S or F water.	115

[3] "Natural waters" only excludes water conveyance systems which are artificially constructed and actively maintained for irrigation.

[4] "Fish habitat" means habitat which is used by fish at any life stage at any time of the year including potential habitat likely to be used by fish which could be recovered by restoration or management and includes off-channel habitat. Fish habitat will be established based upon a multi-parameter, field-verified, peer-reviewed GIS logistic regression model using geomorphic parameters such as basin size, gradient, elevation and other indicators.

[5] "Perennial streams" include all Type N waters that do not go dry at any time during a year of normal rainfall. Type N waters will be "perennial streams" if they have a basin size in excess of 52 acres.

[6] "Seasonal streams" include all Type N streams that are not categorized as perennial streams.

TABLE 1 Summary of Management Zone Widths		
Water Type	**Water Body Criteria**	**MZ**
N – more than 1/4 mile upstream from Type S or F Stream	All segments of natural waters within the bankfull widths of defined channels that are not Type S or F waters and that are perennial streams or seasonal streams and are physically connected by an above-ground channel system to downstream waters such that water or sediment initially delivered to such waters will eventually be delivered to a Type S or F water.	65

B. Exempt Activities

This Program does not apply to certain activities that are likely to have minimal impact on salmonid habitat, or that are covered by other aspects of the Tri-County Model Proposal. If they are legally established uses, the following activities are exempt from this program:

- Interior building improvements.
- Exterior structure maintenance activities, including painting and roofing.
- Routine landscape maintenance of established, ornamental landscaping, e.g. lawn mowing, pruning and weeding.
- Maintenance of the following *existing* facilities that does not expand the affected area: septic tanks (routine cleaning); driveways and other paved surfaces other than roads; wells; individual utility service connections; and individual cemetery plots in established and approved cemeteries.
- Data collection and research by non-mechanical and hand-held mechanical site exploration and survey/monument placement, or other mechanical site exploration and survey/monument placement if performed in accordance with State-approved sampling protocols or ESA Section 10(a)(1)(a), Section 7 consultation, or in a built environment with existing access roads, provided that all spoils are contained. Otherwise, no excavation, grading, fill, or disturbance of native vegetated areas is exempted within this category.
- Road maintenance activities conducted by or performed at the direction of a local government pursuant to Chapter Four of this Model Proposal, the *Tri-County Regional Road Maintenance Program Guidelines.*

C. Compliance with Other Laws and Regulations

Adoption of this program does not alter the requirement to comply with all other applicable local, state and federal laws and regulations.

III. Regulatory Options

Local governments may choose to adopt any one or more of the following three options for regulating development within the Management Zone: (1) the fixed regulation option; (2) the site-specific habitat evaluation option; or (3) programmatic habitat evaluation option.

A. Fixed Regulation Option

The fixed regulation option shall apply the following set of standards to development activity in the Management Zone. An activity that is not explicitly allowed or addressed under these regulations is not permitted through the fixed regulation option. If the local

government has adopted the site specific or programmatic habitat evaluation option, the development activity shall be evaluated under one of those options.

1. **Defining the Inner and Outer Management Zones**. For purposes of the fixed regulation option, the Management Zone is further divided into inner and outer zones. The purpose of the inner zone is to protect the aquatic body and to provide the majority of nearshore habitat functions necessary for salmonid conservation, or, where those functions are degraded or non-existent due to human actions, provide an area where those functions could be recovered. The outer zone is intended to provide additional functions, as well as to ensure the proper functioning of the IMZ.

   The area of the inner and outer Management Zone varies depending on the value of the habitat for salmonid conservation; the level of development in the sub-basin; and the presence of a CMZ, steep slope or associated wetland.

   The Inner Management Zone (IMZ) includes the water body and lands adjacent to the water body ranging from 65 to 150 feet in width (see Table 2) except under the following conditions:

   - Where steeply sloping lands exist within the IMZ, the IMZ is extended out to include the slope and lands 25 feet beyond the top of the slope.
   - Where lands adjacent to an aquatic water body contain a CMZ or an associated wetland, the IMZ is extended to include these features.

   The Outer Management Zone (OMZ) includes the area landward of the IMZ and generally ranges between 0 and 85 feet (See Table 2). Under the Fixed Regulation Option, the following table summarizes the inner and outer Management Zone widths for the different water types (refer to Table 2 for the specific width requirements and from where they are measured):

Table 2:
Inner and Outer Management Zone Widths

Water Type	Management Zone	
	Rural[7] (Inner/Outer)	Urban[8] (Inner/Outer)
S	150/50	115/85
F	150/50	115/85
F – Steep Ravine	Greater of 100 feet or 25 feet from top of bank	Greater of 100 feet or 25 feet from top of bank
N – within 1/4 mile upstream of a Type S or F water	115/0	115/0
N – more than 1/4 mile upstream from Type S or F Stream	65/0[9]	65/0[10]

[7] The Rural Management Zone applies outside designated Urban Growth Areas, including lands designated as either rural or natural resource under the GMA.

[8] The Urban Management Zone applies within designated Urban Growth Areas.

[9] The area within the dripline that extends beyond the IMZ of any significant tree in the IMZ shall be left undisturbed during construction. Temporary fencing shall be placed at the dripline prior to grading to protect the area during development.

[10] See Footnote 9.

2. **Inner Management Zone Width Averaging.** The width of the Inner Management Zone (IMZ) may be averaged, provided that:

- The width of the IMZ shall not be reduced below 75% of the standard width at any point. (See Table 2, above).
- Encroachment into the IMZ shall not occur waterward of the top of associated steep slopes or into a CMZ.
- Encroachment shall not occur into the buffer of an associated wetland.
- The area of the IMZ after averaging shall be equivalent to the area prior to averaging.
- The structure and function of the IMZ after averaging shall be equivalent to the structure and function prior to averaging.
- Averaging shall not be allowed where the prescribed IMZ width is less than fifty (50) feet.

Averaging shall not be allowed where the resulting development activity will preclude the opportunity for future recovery of structure and function of the area within the Management Zone.

3. **Inner Management Zone Restrictions—Exceptions**. The specific regulations and limitations on development activities, within the IMZ are set forth in a. and b. below. (Additional exceptions with required mitigation and restrictions are found in section 7 below.)

a. Restricted Use and Permanent Protection. There shall be no development activity allowed within the IMZ, except as otherwise allowed below. The IMZ shall be permanently placed in a separate, protected tract such as a native growth protection easement or conservation easement, and the restrictions on its use shall run with the land. Appropriate signage shall be placed on site notifying the public and property owner(s) that the area is protected habitat and no disturbances are allowed. Notice of the separate tract and its use restrictions shall be recorded against the title of the subject property with the county auditor.

b. Exceptions—Allowed Uses Inside the Channel Migration Zone. The following development activities and uses are allowed inside the CMZ of the IMZ, provided that the use or activity conforms to the restrictions described herein. As a general rule, repair and maintenance of lawfully established existing structures that inhibit channel migration (e.g., bank-stabilization structures) is allowed, provided that neither the originally-built size nor the location of those structures is changed by the repair or maintenance.

- Preexisting Structures. On existing lots already built-out and not further subdividable in CMZ, but outside the floodway, the following restrictions apply:
  (a) Streambank stabilization to protect new structures from future channel migration is not permitted except when such stabilization is achieved through vegetation as part of an approved vegetation planting scheme.
  (b) Clearing is limited as follows: If more than 35% of the site within the CMZ is presently cleared, no additional clearing may occur within the CMZ. If less that 35% of the site within the CMZ is presently cleared, additional clearing to a maximum of 35 % of site area within the CMZ is permitted.
- Forest Practices. Timber harvesting and other timber stand management actions that are conducted at least 150 feet from the BCE, including side

11changes, are authorized within the CMZ if such timber harvest and management activities are conducted pursuant to State or Federal laws and regulations.

- Firewood harvesting. Firewood harvesting for personal use is permitted if no trees are removed from within 150 feet of the BCE, including side channels.
- Recreation. Recreation with no permanent utilities is permitted, with no more than 1000 square feet of disturbance, if the disturbance area is at least 150 feet from the BCE, including side channels.

4. **Outer Management Zone Regulations**. Development activity occurring in the OMZ shall be limited and must meet the following requirements:

   a. Location of Structures. There shall be a 15-foot setback from the IMZ and from any significant trees or wetland buffers in the OMZ. New structures otherwise permitted under these fixed regulations shall be sited to avoid the creation of future hazard trees and minimize the impact of the structure on groundwater movement.

   b. Impervious Surfaces. No "effective impervious surfaces" may be created within the OMZ.

   c. Clearing and Grading Restrictions: Grading is allowed in the OMZ only during the dry season – May 1 to October 1st of any year.

      - Filling or modification of a wetland is permitted only if it is conducted as part of an A project approved under the ESA.
      - The soil duff layer shall remain undisturbed except for the minimum amount necessary to allow for the proposed development. To the maximum extent practicable, any soil disturbed shall be redistributed to other areas of the project site.
      - The area within the dripline that extends beyond the IMZ of any significant tree within the IMZ shall be left undisturbed during construction. Temporary fencing shall be placed at the dripline prior to grading to protect the area during development.
      - The moisture-holding capacity of the topsoil layer shall be maintained by minimizing soil compaction or reestablishing natural soil structure and infiltrative capacity on all areas of the site that impervious surfaces do not cover.
      - Erosion and sediment control that is consistent with or better than the requirements of Chapter Three of this Model Proposal, the *Stormwater Management Model Program* shall be provided.
      - New clearing and grading shall not be permitted within the IMZ except as specifically authorized by these fixed regulations and shall be managed so that hydrologically mature vegetation may be established where it does not currently exist.

   d. Removal of Hazard Trees. To the maximum extent practicable, no portion of a hazard tree shall be removed from the IMZ. Where hazard trees must be modified to reduce the hazard, the preferred treatment should be topping. Where topping is not practicable, the tree should be pulled over toward the water body.

5. **Wetland Buffers**. A minimum buffer of 100 feet shall be maintained around any associated wetlands within the Management Zone, except that the minimum buffer on wetlands associated with Type N waters more than 1/4 mile upstream from a Type S or F stream is 65 feet.

6. **Retention of Vegetation and Trees within the Management Zone**. Sixty-five percent (65 %) of the Management Zone shall be set aside in an undeveloped state to protect existing, hydrologically mature vegetation or the potential of future re-establishment of such vegetation. In addition to the IMZ, which shall be set aside in its entirety, a portion of the OMZ shall also be set aside, as necessary, to achieve an average of sixty-five percent (65%) in an undeveloped state over the entire area of the site located within the Management Zone. The vegetation in the OMZ shall be spatially connected to the vegetation in the inner zone to prevent creation of windthrow hazards in the IMZ. Trees remaining in the OMZ as part of the 65% vegetation retention area can be harvested if an approved timber management plan is in place and the plan preserves the size, coverage, and species diversity of a naturally occurring stand of trees.

7. **Exception -- Allowed Uses Inside the Management Zone -- Habitat Evaluation and Mitigation Required**. The following development activities that disturb the IMZ or that exceed the limits established in the OMZ must prepare a HE described in Section B and in Appendix 2-D that analyzes the effects of the proposal and proposes conservation measures to mitigate those effects following the mitigation requirements in Appendix 2-E. Only those development activities and mitigation requirements specifically described under this section are allowed under the Fixed Regulation Option.

   a. Flood protection facilities. Repair, maintenance, or renovation of lawfully established flood protection facilities, such as dikes, levees, or revetments, is permitted, provided that the work does not increase the height of the facility or linear length of the affected stream edge, does not expand the footprint of the facility waterward or into any landward aquatic habitat and provided that the project design uses approved fish-friendly bioengineering techniques to the maximum extent practicable. New flood protection structures and expansion of existing ones are not authorized under prescriptive regulations.

   b. Emergency repairs. Emergency protection, including repairs to existing facilities, necessary to protect against imminent harm to people or serious damage to public facilities and private residences, barns, places of business, and sole access roads are permitted only if an "emergency" is found to exist. The determination of whether the situation is an emergency shall include consideration of at least the following factors: (1) whether the harm or damage is imminent in nature and the extent to which the harm or damage could not be predicted; (2) whether the project proponent has taken any action to increase the probability and/or magnitude of the threat; and (3) whether the project proponent has taken appropriate proactive measures to reduce the magnitude or probability of the harm or damage. Acceptable post-emergency mitigation measures, including modification or removal of the emergency repair work, shall be required for on-site and off-site impacts.

   c. Bank stabilization. Maintenance of lawfully-established existing permanent bank stabilization and erosion hazard protection measures is permitted, provided that the work does not increase the height or linear amount of bank and does not expand waterward or into any aquatic habitat landward of the facility. New permanent bank stabilization and erosion hazard protection measures shall not be allowed under the fixed regulations option. *Any* maintenance of existing bank stabilization shall be subject to compliance with standards equal to or better than the *Integrated Streambank Protection Guidelines* of the WDFW.

d. Instream structures. A new instream structure (including, but not limited to, high flow bypasses, sediment ponds, instream ponds, retention and detention facilities, tide gates, flood gates, dams, weirs, etc.), shall be allowed only as part of a project approved by the State and/or Federal government.

e. Docks and piers. Repair and maintenance of an existing residential dock or pier shall be permitted, provided that there is no net increase in the (1) use of materials creating shade for predator species or eelgrass, (2) overwater coverage; (3) the spanning of waters between 3 and 13 feet deep, and (4) the size and number of pilings. The use of toxic materials that come in contact with the water in the construction or maintenance of the residential dock or pier is prohibited.

f. Utility crossings of water bodies. Installation or repair or maintenance of a utility is permitted if constructed in an existing, improved roadway, driveable surface or shoulder, subject to compliance with the provisions of the Tri-County Road Maintenance Program (Chapter 4 of the Model). New minor utility lines and facilities are permitted to cross streams of less than 20 cfs mean annual flow if they comply with the following standards:

- Avoid sensitive areas to the maximum extent practicable;
- Bore beneath the IMZ, scour depth and hyporheic zone of the water body and CMZ to the maximum extent practicable;
- When unable to bore, cross the water body at an angle greater than sixty degrees to the centerline of the channel in streams or perpendicular to the channel centerline.
- The lines and facilities are contained within the existing footprint of an existing road or utility crossing where practicable;
- Avoid paralleling the stream (or following a down-valley course near the channel) to the maximum extent practicable;
- Do not increase or decrease the natural rate of shore migration or channel migration;

g. Minor bridges. Minor road bridging (less than or equal to 30 feet wide) is permitted over a stream less than 20 cfs mean annual flow if:

- To the maximum extent practicable, where there is no other alternative route with less impact on riparian habitat or to the listed species;
- The crossing allows for uninterrupted downstream movement of wood and gravel;
- Mitigation for impacts is provided; and
- The road bridge is designed according to the *WDFW Habitat and Lands Environmental Engineering Division's Fish Passage Design at Road Culverts*, March 3, 1999 and the *NMFS Guidelines for Salmonid Passage at Stream Crossings*, (NMFS, 2000).

h. Stormwater management facilities. New stormwater management water quality and flow control facilities may be placed in the outer Management Zone if vegetation retention and site clearing limits are met. To the maximum extent practicable, conveyance structures whose sole purpose is to convey treated stormwater, or water bypassed around water quality treatment facilities pursuant to an approved stormwater plan shall not be constructed in the IMZ. Where appropriate, stormwater conveyance facilities permitted in the Management Zone shall incorporate fish habitat features necessary for feeding, cover, and/or reproduction, as appropriate. Vegetation shall be maintained and added, if

necessary, adjacent to all open channels and ponds, in order to retard erosion, filter out sediments, and shade the water. Maintenance and repair of existing stormwater management facilities in the Management Zone is allowed if carried out in compliance with guidelines approved by NMFS and USFWS.

i. Septic systems. New septic systems and repair to existing systems are permitted in the OMZ if it meets vegetation retention and site clearing limits and is accessory to development otherwise allowed by the fixed regulations. Repairs to failing septic systems in the IMZ shall be accomplished by one of the following, whichever results in least impact: 1) connection to a sanitary sewer connected within 300 feet, 2) replacement with a new septic system located outside of the IMZ, or 3) repairs to the existing system.

j. Clearing and Grading for Development – Six (6) Authorized Activities:

(1) Modifications to Seasonal Grading Restrictions. A local government may extend or shorten the dry season on a case-by-case basis based on actual weather, considering the potential for adverse weather conditions based on the following: past weather patterns and rainfall distribution, together with a sight assessment of topography, soils, phasing, BMP's and a proposed grading plan.

(2) Lots Inside the UGA that are Completely Within the Management Zone. For a lot located in a sub-basin with an urban level of development where no practicable alternative exists that would allow development completely outside the MZ and where the lot is not located in the CMZ or on a transitory feature such as a sandbar, spit, or sand point on a marine shoreline, or on or within 25 feet of the top of a steep slope, or within a landslide hazard area, the following amount of clearing and grading is allowed:

a. Maximum disturbance area within the Management Zone:

Area Located Within the Management Zone	Maximum Amount of Disturbance Allowed
0 to 5,000 s.f.	2,500 s.f.
5,001 s.f. to 9,999 s.f.	50% of the area within the MZ
10,000 s.f or more	5,000 s.f.

b. Disturbance areas shall be located outside of the IMZ or, if disturbance within the IMZ is unavoidable, the disturbance shall be as near to the landward edge of the IMZ as practicable.

c. No development is allowed within 50 feet of the water body or CMZ edge, or any side channel, oxbow, spring, or other type of off-channel habitat.

d. That part of the IMZ that is not disturbed by development shall be managed for native or approved vegetation and planted with native or approved vegetation where necessary following adopted guidelines to reestablish natural forested conditions. (See, Oregon Aquatic Habitat Restoration Guide – Riparian Zone Planting).

e. There shall be no filling or modification of wetlands located within the IMZ, other than as part of a fish habitat enhancement project approved pursuant to the appropriate provisions of the ESA.

f. To avoid stormwater impacts, additional effective impervious surface within IMZ shall be limited to the maximum extent practicable. For any effective impervious surface that is created, mitigation for the effects shall be provided on-site or through a mitigation bank, or other acceptable off-site measures.

(3) Lots Inside the MZ Located Behind an Existing Transportation Corridor. For development on an existing legal undeveloped lot where no alternative exists that would allow development completely outside the MZ and where the lot is not located in the CMZ or on a transitory feature such as a sandbar, spit, or sand point on a marine shoreline, or on or within 25 feet of the top of a steep slope, or within a landslide hazard area and which is separated from a waterbody by (1) an existing public road, (2) an existing private sole access road in the UGA, or (3) a railroad:

a. Maximum disturbance area within the MZ (Areas outside the MZ are subject to applicable clearing, grading, critical areas regulations and other non-ESA local and state regulations):

Area Located Within the Management Zone	**Maximum Amount of Disturbance Allowed**
0 to 5,000 s.f.	2,500 s.f.
5,001 s.f. to 9,999 s.f.	50% of the area within the MZ
10,000 s.f or more	5,000 s.f.

b. Disturbance areas shall be located outside of the IMZ, or if disturbance within the MZ is unavoidable, the disturbance shall be as near to the landward edge of the IMZ as practicable.

c. There is no filling or modification of wetlands located within the IMZ, other than as part of a project approved under the ESA.

d. To avoid stormwater impacts, additional effective impervious surface within IMZ shall be limited to the maximum extent practicable. For any effective impervious surface that is created, mitigation for the effects shall be provided on-site or through a mitigation bank, or other acceptable off-site measures.

(4) Lots Inside the MZ that are Located Behind Other Buildable Lots. For development of an existing legal undeveloped lot separated from a water body by an existing legal buildable lot with no alternative to conducting development activity outside the MZ and where the lot is not located in the CMZ or within 25 feet of the top of or on a steep slope or within a landslide hazard area:

a. Maximum disturbance area within the MZ: (Areas outside the MZ are subject to applicable clearing, grading, critical areas regulations and other non-ESA local and state regulations):

Area Located Within the Management Zone	Maximum Amount of Disturbance Allowed
0 to 5,000 s.f.	2,500 s.f.
5,001 s.f. to 9,999 s.f.	50% of the area within the MZ
10,000 s.f or more	5,000 s.f.

b. Disturbance areas shall be located outside of the IMZ where practicable, or if disturbance within the MZ is unavoidable, the disturbance shall be as near to the landward edge of the IMZ as practicable.

c. There is no filling or modification of wetlands located within the IMZ, other than as part of an A project approved under the ESA.

d. To avoid stormwater impacts, additional effective impervious surface within IMZ shall be limited to the maximum extent practicable. For any effective impervious surface that is created, mitigation for the effects shall be provided on-site or through a mitigation bank, or other acceptable off-site measures.

(5) Lots inside the MZ Located Behind Permanent Flood or Erosion Control Structures. For development on an existing legal undeveloped lot located in the MZ behind a flood control structure or erosion control structure, which is determined to be a substantial constraint for purposes of determining the CMZ boundary, and where no potential exists to conduct the development activity outside the MZ and where the lot is not located within 25 feet of the top of or on a steep slope or within a landslide hazard area:

a. Maximum disturbance area within the MZ: (Areas outside the MZ are subject to applicable clearing, grading, critical areas regulations and other non-ESA local and state regulations):

Area Located Within the Management Zone	Maximum Amount of Disturbance Allowed
0 to 5,000 s.f.	2,500 s.f.
5,001 s.f. to 9,999 s.f.	50% of the area within the MZ
10,000 s.f or more	5,000 s.f.

b. Disturbance areas shall be located outside of the IMZ if practicable, or if disturbance within the MZ is unavoidable, the disturbance shall be as near to the landward edge of the IMZ as practicable.

c. There is no filling or modification of wetlands or lands behind dikes with tidally influenced waters located within the IMZ, other than as part of an A project approved under the ESA.

d. To avoid stormwater impacts, additional effective impervious surface within IMZ shall be limited to the maximum extent practicable. For any effective impervious surface that is created, mitigation for the effects shall be provided on-site or through a mitigation bank, or other acceptable off-site measures.

e. No development is allowed within 50 feet of the water body or CMZ edge, or any side channel, oxbow, spring, or other type of off-channel habitat except as otherwise authorized by the prescriptive standards.

f. No construction in or filling of a connectable relic channel.

g. If the dike is of such height that opportunity for large woody debris (LWD) recruitment exists, the part of the IMZ that is not disturbed by development shall be managed for native or approved vegetation and

planted with such vegetation where needed according to guidelines adopted for reestablishing natural forest (see Oregon Aquatic Habitat Restoration Guide – Riparian Zone Planting).

(6) Existing Single Family and Multi-family Residential Structures Located Inside the Management Zone. For any expansion, replacement, or redevelopment of an existing legal structure on an existing legal lot located within the Management Zone that is not located in the CMZ, within 25 feet of the top of or on a steep slope, or within a landslide hazard area:

a. The expansion of existing multi-family structures and the conversion of lots from single family to multi-family use is not permitted under the prescriptive regulations.

b. Where practicable, additional space should be added within the existing building envelope.

c. Maximum disturbance area within the MZ: If the expansion or redevelopment project will either leave or restore the IMZ as a vegetated buffer, the maximum disturbance area following expansion or redevelopment shall be the same as would have been permitted if the site was undeveloped:

Area Located Within the Management Zone	Maximum Amount of Disturbance Allowed
0 to 5,000 s.f.	2,500 s.f.
5,001 s.f. to 9,999 s.f.	50% of the area within the MZ
10,000 s.f or more	5,000 s.f.

If the expansion or redevelopment project will not leave or restore the IMZ as a vegetated buffer, the maximum disturbance area following expansion or redevelopment shall be limited to the lesser of 1000 additional square feet of disturbance area or the same area that would have been permitted if the site was undeveloped: (Under either scenario, disturbance must be located as close to the landward edge of the IMZ as is practicable).

Area Located Within the Management Zone	Maximum Amount of Disturbance Allowed
0 to 5,000 s.f.	2,500 s.f.
5,001 s.f. to 9,999 s.f.	50% of the area within the MZ
10,000 s.f or more	5,000 s.f.

d. That part of the IMZ that is not disturbed by development shall be managed for native or approved vegetation and planted with native or approved vegetation, where necessary, following adopted guidelines to reestablish natural forested conditions (See, Oregon Aquatic Habitat Restoration Guide – Riparian Zone Planting).

e. To avoid stormwater impacts, additional effective impervious surface within IMZ shall be limited to the maximum extent practicable. For any effective impervious surface that is created, mitigation for the effects shall be provided on-site or through a mitigation bank or other off-site measures.

f. No filling or other modification of wetlands inside the IMZ is allowed, except as part of a habitat project approved under the ESA.

8. Mitigation Requirements.
Appropriate mitigation shall be required as outlined in Appendix 2-E for loss of salmonid habitat area and functions and values caused by the development activities subject to the regulations described herein.

B. Site-Specific Habitat Evaluation Option

When selected as an option for evaluating a proposed development activity, an HE shall be used to determine if the project as proposed is consistent with the habitat objectives and sub-objectives contained in Appendix 2-C. The HE shall provide an analysis of the proposal's short-term, long-term (temporal) and cumulative impacts. In addition, the HE requires an analysis of the potential for the project to preclude future recovery opportunities. A local government may approve a project proposal only if the HE demonstrates that the habitat objectives and sub-objectives are being met and there is no preclusion of future recovery opportunities.

The scope and scale of the HE will depend on the scope and complexity of the proposed project. If the habitat evaluation predicts adverse effects, it shall incorporate conservation measures sufficient to fully mitigate for the adverse impacts of the proposal. The following provides a general outline of the Habitat Evaluation. For more details on submittal requirements and methods see Appendix 2-D.

1. Basis of Habitat Evaluation. The purpose of a site-specific HE is to ensure the identification and preservation of the processes that form habitat and that are important for salmonid conservation. Using the best available science, the effects of a development activity on a given habitat function or component will be identified and, to the extent practicable, quantified. The effects are then extrapolated to assess impacts on the species as a whole based on relationships between habitat condition and population viability.

Ideally, reliable scientific information on a species' biological requirements would exist at both the population and the ESU levels, and effects on habitat should be readily quantifiable in terms of population impacts. In the absence of watershed or sub-basin specific habitat conditions and requirements, the HE shall rely on generally applicable scientific research that can be reasonably extrapolated to estimate habitat impacts of individual projects at small scales. (See, The Habitat Approach: Implementation of Section 7 of the Endangered Species *Act for Actions Affecting the Habitat of Pacific Anadromous Salmonid (*1999), Habitat Conservation and Protected Resources Division, NMFS Northwest Region. Seattle, Washington), hereinafter (NMFS, 1999).

Actions that affect biological requirements and processes are usually measured by the services against a desired range of habitat conditions called Properly Functioning Conditions (PFC). PFC is the sustained presence of natural habitat forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation (NMFS 1999). Consistent with the PFC approach, the habitat evaluation used under this option is based on site-specific evaluation of the effects on habitat functions and processes necessary to meet habitat objectives.

2. Habitat Evaluation Outline. In general, the habitat evaluation shall:

- Describe the impacts as they relate to habitat functions and habitat objectives and sub-objectives, including short-term and long-term (temporal impacts) potential direct, indirect, and cumulative impacts;
- Assess the inherent site potential by describing the project area's natural geomorphologic potential for habitat in a watershed context;
- Assess the preclusion of any future recovery opportunities on the project site; and
- Describe conservation measures that will be carried out as mitigation to offset adverse effects of the project on salmonid habitat.

a. Habitat Goals and Objectives. A review of the impacts shall be conducted of the project against each of the "habitat goals and objectives and "sub-objectives" as listed in Appendix 2-C and measured based on methods described in Appendix 2-D of the Technical Committee Report. The habitat goals can be summarized as to provide:

- Unimpeded access and movement;
- In-water and waters' edge structural conditions; and
- Habitat forming functions and processes critical for the maintenance or restoration of the in-water and water's edge structural conditions.

These goals should be considered in the context of salmonid essential habitat types as described by NMFS:[11]

- Juvenile rearing areas;
- Juvenile migration corridors;
- Areas for growth and development to adulthood;
- Adult migration corridors; and
- Spawning area.

b. Determining the Inherent Site Potential. In addition to documenting the existing site conditions, the project proponent shall also evaluate the functions that the site could have provided absent pre-European settlement development. This is the site's inherent site potential (ISP). This usually entails a historic reconstruction of the site's geomorphology, hydrology and vegetation and the role the site could play in the conservation of salmonids. Often, historic documents such as maps, surveys and photographs are a good source of this information. Where documentation is missing or incomplete, site functions can be inferred from sites occupying similar geomorphic settings and landscape scales. In these situations, the watershed location, valley confinement and gradient, surficial geology and sediment routing and the habitat functions those types of sites usually provide, are the basis for determining the site potential. For example, absent modern development, did the site have, or could it reasonably have provided, side channels, oxbows, or other off-channel features? Was it a source area of gravel, LWD, or other habitat forming processes?

c. Determining Impacts to Future Recovery Opportunities. In addition to analyzing direct project impacts, the applicant shall analyze project related impacts that will impede the long-term ability of the site to achieve its ISP. To accomplish this, the analysis shall first identify those site conditions

[11] FR 65(32) page 7773.

currently preventing the site from achieving its ISP. Then, the analysis shall identify those proposed development activities that will prevent the site from achieving ISP. The gap between a site's current recovery potential and the recovery potential after completion of the proposed project shall be considered an impact to future recovery opportunity.

The analysis of future recovery opportunities in the HE shall:

- Assess historical site characteristics, existing site conditions, inherent site potential, site limitations, and proposed site conditions following development;
- Identify and assess the potential habitat functions that may be precluded by the proposed development of the site;
- Identify the potential habitat functions precluded by the existing development;
- Identify the potential habitat functions precluded by a substantial constraint; and
- Assess whether there is a reasonable likelihood that the potential habitat functions precluded by the proposed development on the site would occur and, if so, within what time frame; and
- Identify appropriate conservation measures for the habitat functions that would be reasonably likely to occur but will be precluded by the development proposal and that are not precluded by substantial constraints.

The purpose of this analysis is to provide the decision-maker with information to evaluate the benefits and risks of a range of alternatives for the proposed development, including but not limited to, approval of the project as proposed, approval of the project with modifications, public acquisition of the site for habitat restoration purposes, or denial of the project. Appropriate conservation measures shall be required to compensate for the habitat functions that are reasonably likely to occur but are precluded by the development proposal and that are not precluded by substantial constraints.

Local governments seeking to exempt features that are defined as substantial constraints from the regulation and protections set forth in this Model Program may be required to provide alternative mitigation by the Services in order to address those habitat functions that are precluded by the existence of such substantial constraints.

d. Conservation Measures to Offset Identified Impacts. Conservation measures intended to serve as mitigation for direct impacts and impacts to recovery potential, shall be equivalent in kind (i.e., replace the same kinds of ecosystem attributes and processes that are lost or degraded) and in place (i.e., located at or very near the sites of the lost or degraded attributes). The intended end result of this approach is a project site that, to the extent practicable, provides the functions that existed prior to the project and has the same opportunity for recovery of additional functions that would be expected to naturally occur at that site.

3. Programmatic Habitat Evaluation Option

A programmatic habitat evaluation shall be prepared by, or overseen and approved by, the corresponding local government, subject to final review and approval by NMFS and USFWS. The programmatic evaluation examines a pre-determined geographic area or a type of project activity and, using the habitat evaluation methods described in Section B and Appendix D (and elsewhere in this proposal), or otherwise scientifically sound evaluation methodology, determines a programmatic strategy to protect and restore habitat essential to the salmonids within the specified geographic area. Such evaluation shall identify potential effects of proposed development and redevelopment in the geographic area. The programmatic strategy shall establish a tailored set of development regulations and conservation measures that address the protection and restotration of habitat essential to salmonids.

An example of a Programmatic Habitat Evaluation using an approach that is different from the one described here is included at Appendix 2-6. It is known as the *Built Area Option for Land Use Management* (BAO*)*. The BAO was designed for jurisdictions whose landscapes are dominated by built systems which interfere with natural habitat-forming processes. The BAO, like this Model, has not yet been deemed the MRCI Limit of the Final 4(d) Rule.

V. Glossary to the Land Management Development Regulations

Active channel—The part of a stream's channel lying between the borders of live terrestrial vegetation. During low flow, the margin of an active channel may often consist of unwetted stones, wood debris, sand, or mud essentially devoid of live vegetation (analogous to the beach of a lake).

Associated Wetland—Wetlands either wholly or partially contained within; 1) 200 feet of the BCE of any stream, marine shoreline, estuary or lake (includes only lakes with stream outlets to salmonid bearing waters); 2) the Shore Migration Zone or Channel Migration Zone; or 3) the buffer of any of the above.

Avulsion—The rapid erosion of a shore by wave action during a storm; the sudden isolation of a piece of land by flood water or by a change in the course of a river (Lincoln et al. 1993).

Bankfull channel—The channel lying between the points on the stream banks that delineate the inner (streamward) boundary of the flood plain. This boundary is often identifiable as the "crest" or breakpoint of the bank.

Best Available Technology—The technology that provides the greatest degree of protection to the natural resource, taking into consideration processes that are developed, or could feasibly be developed given overall reasonable expenditures on research and development, and processes that are currently in use. In determining what is best available technology, the local government shall consider the effectiveness, engineering feasibility and commercial availability of the technology.

Biota—The total flora and fauna of a given area (Lincoln et al. 1993).

Channel—The physical groove in which a stream flows or used to flow; usually formed by the flowing water.

Channel Migration Zone (CMZ)—The swath of land across which a stream channel moves via bank destabilization, rapid stream incision, lateral bank erosion and shifts in the location of stream channels.

Clearing—The act of removing vegetation, usually tree removal but also removal of brushland, meadow, or wetland vegetation.

CMZ—See Channel Migration Zone.

Critical Habitat— (See Endangered Species Act).

Development Activity—Any construction, development, earth movement, clearing, or other site disturbance of the land, except as listed under exemptions.

Development Site— (Defined by local ordinance).

Disturbance Area— (Defined by local ordinance).

Discharge— (See streamflow discharge).

Elimination—In ecological energetics, any loss of biomass or energy by a population or trophic unit per unit time per unit area or volume, including losses due to mortality, predation, emigration, and moulting (Lincoln et al. 1993).

Enhancement—For the purposes of this document, an action which improves the functions of salmonid habitat.

Estuary—Any semi-closed coastal water, open to the sea, having a high freshwater drainage and marked with cyclical fluctuations in salinity; usually the mouth of a river (Lincoln et al. 1993).

ESU —(See Evolutionarily Significant Unit)

Fish Habitat – All habitat which is used by fish at any life stage at any time of the year including potential habitat likely to be used by fish which could be recovered by restoration or management and includes off-channel habitat.

Habitat—The locality, site, and particular type of local environment occupied by an organism (Lincoln et al. 1993).

Habitat Evaluation—A procedure for determining the abundance and quality of habitat features for a species or other taxonomic group (in this case, salmonid fishes) at or on a particular site or property.

Habitat Evaluation Report Package—The combined materials that compose a report on a habitat evaluation *q. v.*, including narrative on methods and findings, as well as maps and data in tabular and graphic form.

Hazard Tree—

Higher high water—The higher of two high waters during any tidal day in areas where there are marked inequalities of tidal height (Lincoln et al. 1993).

Hydrologically connected—A connection between two or more surface water bodies including, but not limited to, wetlands, streams or lakes as evidenced by:

A. The presence of surface water in a perennial or intermittent stream, through a culvert or otherwise above ground;
B. The presence of contiguous hydric soil; or
C. The location of a water body within or contiguous to a one hundred-year floodplain of a wetland, stream or lake.

Hydrologically Mature Forest—

Hyporheic—Pertaining to saturated sediments beneath or beside streams and rivers (Lincoln et al. 1993).

Hyporheic Zone—The region beneath the stream bed and floodplain where ground water interacts and mixes with surface waters generally associated with streams. Water in the hyporheic zone flows generally in the down-valley direction but fluctuates between the stream channel and subsurface. Unless detailed studies have been conducted, the hyporheic zone for streams shall be defined as; all lands within the 100 year flood plain and all lands perpendicular from the stream that are at or below the bankfull elevation of the stream.

Infiltration—The process by which water seeps into a soil, influenced by soil texture, aspect, and vegetation cover (Lincoln et al. 1993).

Inherent site potential (ISP)—The potential that a site has for contributing to the ecological functions that are necessary for salmonid conservation, this potential being based on the natural (inherent, i.e., pre-Columbian) characteristics of the site.

IMZ (see *Inner Management Zone*).

Inner Management Zone—The prescribed part of a riparian Management Zone which lies closest to the water body in question (see also *Management Zone* and *Outer Management Zone*).

ISP (see *Inherent Site Potential*)—a measure of the habitat functions an area could provide, absent modern human development.

Lake—A large body of fresh or saline standing water having negligible current and a narrow peripheral beach largely devoid of vegetation as a result of wave action (Lincoln et al. 1993).

Littoral—1: Pertaining to the shore; 2: The shore of a lake to a depth of about 30 feet; 3: The intertidal zone of the seashore (Lincoln et al. 1993).

Maintenance – those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition without any expansion of or significant change from that originally established condition. For the purposes of this document, activities within landscaped areas within areas subject to native vegetation retention requirements may be considered maintenance only if they maintain or enhance the canopy and understory cover.

Management Zone—Land adjacent to all marine shorelines, estuaries, and streams and lakes used by salmonids or the drain into waters used by salmonids. The Management Zone widths are set forth in the underlying document.

Maximum Extent Practicable (MEP) - Means the highest level of effectiveness that can be achieved through the use of *best available technology*. In determining what is the MEP, the local government shall consider, at a minimum, the effectiveness, engineering feasibility, commercial availability, safety and the cost of the measures.

Mass wasting—Landslide processes including debris falls, debris slides, avalanches, debris flows, rockslides, slumps, and collapse of road cuts and fills.

Mean Higher High Water (MHHW)—The average height of all higher high waters *q. v.* recorded at a given place over a 19-year period or computed equivalent period of time (Lincoln et al. 1993).

Meander—A sinuous bend of a stream channel formed by the lateral erosive action of the water current.

Meander wave length—The up-or-down-valley (axial) distance from one point in a stream channel meander system to the next completely analogous point in the system, e.g., the straight-line distance (*not* the in-channel distance) from the crest of one riffle to the crest of the next riffle that has current flowing over it in approximately the same direction—which is the second riffle up- or -downstream from that starting point (deduced from Dury 1969).

MHHW—See *Mean Higher High Water.*

Mitigation—Measures used in sequential order to eliminate, reduce or compensate for adverse impacts to salmonid habitat resulting from a development proposal or alteration.

Native vegetation —A mix of plant species comprising herbs, grasses, grass-like plants, shrubs and trees indigenous to the Puget Sound region that reasonably could be expected to naturally occur on the site.

NMFS—National Marine Fisheries Service (of the National Oceanic and Atmospheric Administration, a division of the U.S. Department of Commerce).

OHWM—See *Ordinary High Water Mark.*

OMZ—See *Outer Management Zone.*

Ordinary High Water Mark (OHWM)—The mark on all lakes, streams and tidal waters that will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland and vegetation, as that condition exists on the effective date of this title, or as it may naturally change thereafter. In any area where the ordinary high water mark cannot be found, the ordinary high water mark shall be the line of mean higher high tide in areas adjoining saltwater, and the line of mean high water in areas adjoining freshwater.

Outer Management Zone—The prescribed part of a riparian Management Zone which lies outside (landward from) the Inner Management Zone.

Production (biological production)—The total elaboration of new tissue in a time period of interest by a species-population; alternatively, the biomass (B), organic matter, or energy accumulated by a population or trophic unit plus that lost by elimination (E) *q. v.* per unit time per unit area or volume, calculated as P = B + E (Lincoln et al. 1993).

Practicable—Capable of being designed, constructed and implemented in a reliable and effective manner, including consideration of cost. When considering cost under this analysis, an alternative shall *not* be considered practicable if the incremental cost of the alternative is substantial and disproportionate to the incremental degree of protection provided by the alternative over other lower cost alternatives.

Productivity—1: The potential rate of incorporation or generation of energy or organic matter by an individual, population, or trophic unit per unit time per unit area or volume; 2: Often used loosely for the organic fertility or capacity of a given area or habitat (Lincoln et al. 1993).

Project—

Project area—

Redd—The place where spawning salmon or trout bury their eggs—and where incubation, hatching, and larval development occur—in a stream bed or lake bed; usually in gravel but for some species in sand that has groundwater upwelling through it.

Riffle—The part of a stream channel which, except during high flow, has, relative to pools and glides *q. v.*, swift, shallow water flowing over gravel; the water surface at riffles often appears turbulent and broken, i. e., having ripples.

Restoration—For the purposes of this document, an action which returns salmonid habitat to a state in which its stability and functions approach its unaltered state as closely as practicable.

Rectification—A for the purposes of this document, n action which repairs an alteration to salmonid habitat and its functions.

Riparian—Pertaining to, living or situated on, the banks of rivers and streams. This term is sometimes, as in this document, extended to pertain to shore areas of standing waters, as well. (Lincoln et al 1993).

Riparian Zone—As a technical, ecological term, the riparian zone consists of land that borders a running water body and is occupied by wetland or semi-wetland vegetation that is typical of such land. The term is sometimes, as in this document, extended to pertain also to a zone along standing waters, including tidewaters. See also *Management Zone, Inner Management Zone, Outer Management Zone.*

Riparian corridor—The swath of land that comprises a stream (which may include one or more lakes, ponds, or wetlands) and the riparian zones *q.v.* on each side of that stream.

Salmonid—A fish or species of the trout-and-salmon family (Salmonidae), including also chars, graylings, and coregonids (whitefishes and ciscos).

Shoreline—

Shoreline migration zone—The zone through which, over many years, the shoreline migrates back and forth by alternate erosion and redeposition of soil.

Side channel—A channel that is secondary to but carries water from the main channel of a stream or the main body of a lake or estuary; included are branches of an anastomosed stream and cut-off oxbow channels that are still connected to a stream.

Site potential—See *inherent site potential (ISP).*

Site-potential tree height (SPTH)—The average maximum height of the tallest dominant trees (200 years or more) on a given site, depending on soil type.

Steep Slope—For this document: Lands having slope of greater than 28 degrees and vertical rise of no less than 10 feet.

Stream—An area where naturally occurring surface water flows sufficiently to produce a defined channel or bed which demonstrates clear evidence of the passage of water including, but not limited to, bedrock channels, gravel beds, sand and silt beds and defined-channel swales. The channel or bed need not contain water during the entire year. This definition does not include water courses which were created entirely by artificial means, such as irrigation ditches, canals, roadside ditches or storm or surface water run-off features, unless the artificially created water course contains salmonids or conveys a stream that was naturally occurring prior to the construction of the artificially created water course.

Streamflow discharge—The volume of water that flows per unit time through the channel cross section at a given point on a stream's course, usually expressed in cubic feet per second (cfs) or cubic meters per minute.

Structure— (See latest edition of the Uniform Building Code).

Subbasin—A drainage area which drains to marine water, lakes or the mainstem of one of the WRIA watersheds.

Take (of fish)— (See Section 9 of the Endangered Species Act).

Thalweg—The path of deepest channel depth along the course of a stream.

Type-F Waters—(See "Forest and Fish Report, March, 2000").

*Type-N Waters—(S*ee "Forest and Fish Report, March, 2000").

UGA—Urban Growth Areas designated by local governments under the Growth Management Act (See, Ch. 36.70A RCW).

Urban Level of Development—A river reach of a mainstem river within the UGA or a sub-basin within the UGA with a mean annual flow greater than 20 cfs. at its confluence with a mainstem river or with a marine or lake shoreline has an "urban level of development" if (1) that river reach or subbasin measured in its entirety has more than 35% total impervious area (TIA) in the river reach or subbasin; and (2) less than 50% of the riparian corridor (as measured within 30 meters of streams within the river reach or subbasin) is intact.

USFWS—U.S. Fish and Wildlife Service (division of the U.S. Dept. of Interior).

Wetland, isolated—A wetland which is not hydrologically connected, does not have permanent open water and is often of low function.

Wetland—(See also *associated wetland*). Any area which is inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. For the purpose of this definition:

A. Where the vegetation has been removed or substantially altered, the presence of a wetland is determined by the presence or evidence of hydric soil, by other documentation such as aerial photographs of the previous existence of wetland vegetation or by any other manner authorized in the "Washington State Wetlands Identification and Delineation Manual," 1997, Department of Ecology;
B. A wetland may occur along the shoreline of tidal water, a lake, a stream or in a depression in the landscape. For any wetland occurring along a shoreline, the wetland's waterward boundary is where the water's depth exceeds six and six-tenths feet below low water or, if low water cannot be determined, six and six-tenths feet below the outlet's invert elevation; and
C. Except for artificial features intentionally made for the purpose of mitigation, a wetland does not include an artificial feature made from a nonwetland area which may include, but is not limited to, a surface water conveyance for drainage or irrigation, a grass-lined swale, a canal, a flow control facility, a wastewater treatment facility, a farm pond, a wetpond, landscape amenities or a wetland made after July 1, 1990 which was unintentionally made as a result of the construction of a road, street or highway.

WRIA—Watershed Resource Inventory Area.